

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Little Osage River

Waterbody Segment at a Glance:

County: Vernon
Nearby Cities: Nevada
Length of impairment: 22 miles
Pollutant: Low Dissolved Oxygen
Source: *

*The U.S. Environmental Protection Agency did not specify a source for this listing



State map showing location of watershed

TMDL Priority Ranking: Medium

Description of the Problem

Beneficial uses of Little Osage River

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

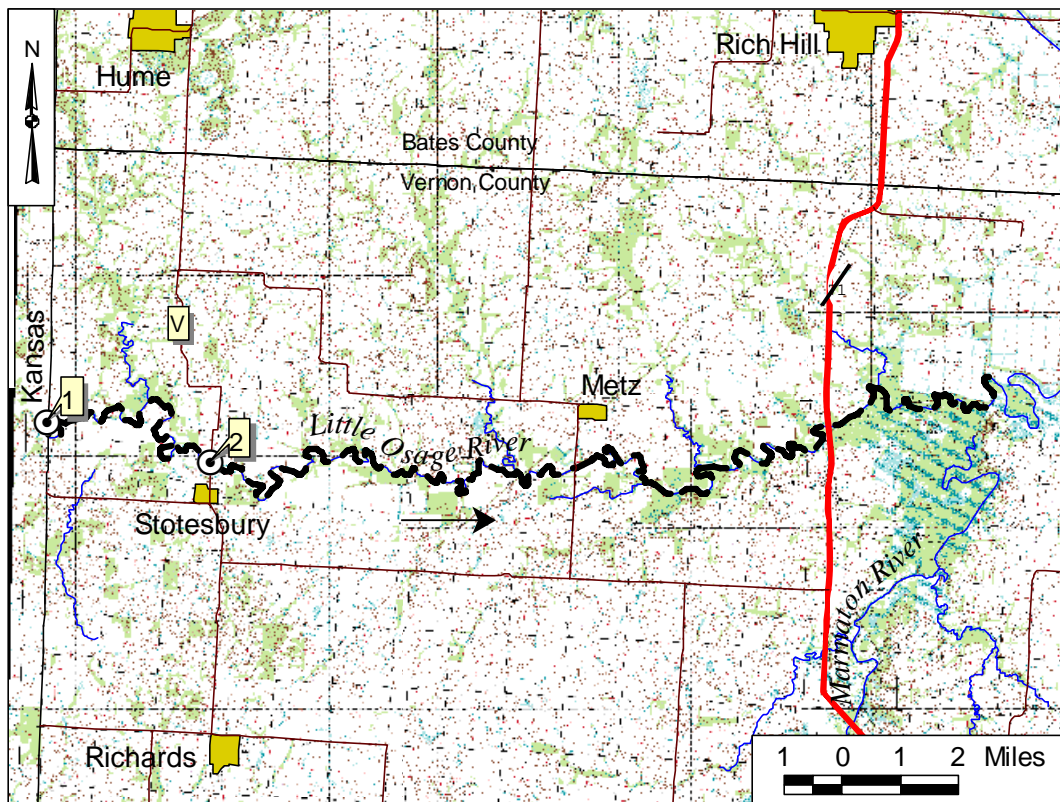
- State Water Quality Standards 10 CSR 20-7.031 state that for protection of warm water aquatic life, the dissolved oxygen level should be no lower than 5 mg/L or the normal dissolved oxygen profile of the stream, whichever is lower.

Background Information and Water Quality Data

Dissolved oxygen (DO) levels in the Little Osage River as measured during summer low flow periods at various locations have ranged from 1.9 to 7.4 mg/L (milligrams per liter or parts per million), with almost half the measurements below 5.0 mg/L. Observed DO levels appear to be due to the normal amount of oxygen demanding material entering the stream from an agricultural watershed. The range in DO is probably a function of just how small the flow in the stream is (if any) and how long the stream has been in this low flow condition. No point source wastewater discharges or significant nonpoint sources are known to exist in the watershed of the Little Osage River and therefore it was proposed for deletion from the 303(d) list. EPA did not approve this

proposal, stating the department “did not provide data to demonstrate that the background values for DO are non-anthropogenic, nor modify its water quality standards to include a site specific criteria or the designated use”. For the next listing cycle, the department will again request this river be delisted because only two observations have been made in the Missouri portion of the Little Osage River in the last seven years. Thus there is inadequate data for listing, according to the recently approved 2004 listing methodology. The department is in the process of drafting new standards for DO. These new criteria should clarify whether or not the observed DO levels in the Little Osage River exceed water quality standards. Also, a DO study is planned for the summer of 2005. A map and a table of data collected by the U.S. Army Corps of Engineers may be found below.

Little Osage River in Vernon County, Missouri, with Sample Sites



— — — — — Impaired Segment

→ Direction of Flow

Dissolved Oxygen in the Little Osage River at the State Line (Site #1), 1991-1994

Date	Temperature (°C)	Dissolved Oxygen (mg/l)	Dissolved Oxygen Saturation
7/1/1991	28	3.9	50%
7/16/1991	26	2.6	32%
8/6/1991	27	2.2	28%

8/27/1991	24	2.4	29%
9/24/1991	16	5.1	52%
6/23/1992	22	6.2	71%
5/10/1994	17	7.4	77%
6/14/1994	24	5.2	62%
7/12/1994	26	2.8	35%
8/16/1994	24	4.8	57%
9/6/1994	23	3.8	44%
10/11/1994	15	1.9	19%

Source: U.S. Army Corps of Engineers, Kansas City District

Dissolved Oxygen in the Little Osage River at Highway V (Site #2), 1999-2002

<u>Date</u>	<u>Temperature (°C)</u>	<u>Dissolved Oxygen (mg/l)</u>	<u>Dissolved Oxygen Saturation</u>
8/10/1999	26	2.3	28%
7/29/2002	27.5	3.1	39%

Source: U.S. Army Corps of Engineers, Kansas City District

For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

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